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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,043	04/05/2002	Vincent L Chiang	066040-9675	9579
23409	7590	02/23/2005	EXAMINER	
MICHAEL BEST & FRIEDRICH, LLP 100 E WISCONSIN AVENUE MILWAUKEE, WI 53202			IBRAHIM, MEDINA AHMED	
			ART UNIT	PAPER NUMBER
			1638	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/980,043

Applicant(s)

CHIANG ET AL.

Examiner

Medina A Ibrahim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 167-183, 185, 187, 188 and 190-206 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 167-169, 173-175, 179, 180, 193-199 and 204-206 is/are allowed.
- 6) ☒ Claim(s) 170-172, 176-178, 181-183, 185, 187, 188, 190-192, and 200-203 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Applicant's response filed 11/16/04 in reply to the Office action of 06/16/04 has been entered. Claims 184, 186, 189 have been cancelled. Claims 167, 169-183, 185, 188, 190, 193, 195-197, 200-201 have been amended. New claims 204-206 have been added. Therefore, claims 167-182, 185, 187-188, 190-206 are pending and are examined.

It is noted that claims 177 and 178 are currently amended to depend from claims 173 and 174, respectively. However, the claims are not marked to show all changes made relative to immediate prior version as required by the 37 CFR 1.121. Also, currently amended claims 188, 196 and 201 are not marked properly. Applicant is required to make a complete review and corrections on all of the claims to comply with the 37 CFR 1.121.

All previous objections and rejections not set forth below have been withdrawn in view of Applicant's amendment to the claims.

### ***Claim Objections***

Claims 174 and 177 are duplicates. Claims 175 and 178 are duplicates. In the interest of compact prosecution, claims 177-178 are considered to depend from claim 176.

At claim 196, "The of claim 194" has been replaced with ---The method of claim 194---, for clarification.

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Claim 201 is objected to in the recitation of "2-3244 of SEQ ID NO: 4". It is suggested that "2-3244" be replaced with ---2 to 3244----

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 171-172 are rejected under 35 U.S.C. 101 because the claimed invention is directed to a non-statutory subject matter which is non patentable. The claims do not recite ---isolated--- or ---recombinant---, and therefore read on a non-isolated polynucleotide that would naturally occur in Arabidopsis plant. See *Diamond v. Chakrabarty* 447 U.S. 303 (1980, Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 76 USPQ 280 (1948), and In re Bergy, Coats, and Malik 195 USPQ 344, (CCPA) 1977. An Amendment to the claim to replace "A" with ---An isolated--- would obviate the rejection.

***Claim Rejections - 35 USC § 112***

Claims 170, 176, 183, 188 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 170 recites "a UDP-glucose binding domain of SEQ ID NO: 5" which implies that SEQ ID NO: 5 contains more than one UDP-glucose binding domain.

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However, claim 176 recites "the UDP-glucose binding domain of SEQ ID NO: 5 which implies that there is no only one UDP-glucose binding domain in SEQ ID NO: 5. The specification fails to shed lights on regarding UDP-glucose binding domains in SEQ ID NO: 5. Clarification is required to more clearly define the metes and bounds of the claims.

Claim 183 is indefinite in the recitation of "corresponds" which is not defined in the specification. The term "corresponds" is open to individual interpretations; therefore, what is encompassed by the claim is unclear. It is suggested that "corresponds" be replaced with ---consists of---.

Claims 185 and 188 are indefinite in the recitation of "a UDP-glucose binding domain" of SEQ ID NO: 1 or 2 which implies that SEQ ID NO: 1 or 2 has more than one UDP-glucose binding domains. It is unclear if SEQ ID NO: 1 or 2 has more than one UDP-glucose binding domains.

Claim 188 is indefinite for depending upon cancelled claim 186. Also, "The method of encoding polypeptide" as recited in the preamble and "cellulose synthase claim 186" in line 2, do not make sense. Appropriate corrections are required to more clearly define the metes and bounds of the claim. In the interest of compact prosecution, claim 188 is considered to depend from claim 183.

#### ***New Matter***

Claims 172 and 201 remain rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time

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the application was filed, had possession of the claimed invention. This is a NEW MATTER rejection.

The claims recite "a polynucleotide....nucleotides 2 to 3244 of SEQ ID NO: 4". However, support for the limitation "nucleotides 2 to 3244 of SEQ ID NO: 4" cannot be found in the specification or in the claims as originally filed. The teaching at page 11, lines 7-17, of the specification is insufficient to provide support for the limitation. This rejection is repeated for the reasons of record as set forth in the last Office action of 06/16/04. Applicant's arguments filed 11/19/04 have been considered but are not deemed persuasive.

Applicant argues that the specification, page 11, lines 7-9, teaches the SEQ ID NO: 5 is the translated polypeptide of SEQ ID NO: 4, and that one skilled in the art can easily recognize that sequence from nucleotides 2 to 3244 of SEQ ID NO: 4 corresponds to the translated polypeptide of SEQ ID NO: 5 by alignment comparison of SEQ ID NO: 4 to nucleotides 660 to 2250 of SEQ ID NO: 1. Applicant also argues that fragments encoding at least one transmembrane domain and/or a UDP-glucose domain as taught on page 11, line 10-17, provide support for the limitation since such fragments encompass the sequence from nucleotides 2 to 3244 of SEQ ID NO: 4 (response, pages 10-11).

These are not persuasive because the teachings on page 11 of the specification fail to provide sufficient basis for the limitation, "nucleotides 2 to 3244 of SEQ ID NO: 4. One skilled in the art would not know that the translated polypeptide of SEQ ID NO: 5 which has 1080 amino acid residues corresponds to the sequence from nucleotides 2 to

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3244, if the "corresponds" language is meant to be ---encoded by---. While the UDP domain of SEQ ID NO: 1 is disclosed as nucleotides 660 to 2250, there is no description in the specification which shows that nucleotides 2 to 3244 of SEQ ID NO: 4 is the UDP binding domain of SEQ ID NO: 4. Therefore, one would not be able to recognize nucleotides 2 to 3244 of SEQ ID NO: 4 by alignment with SEQ ID NO: 1 or nucleotides 660 to 2250 thereof. Therefore, the recitation "nucleotides 2 to 3244" is considered to be a new matter. The rejection is maintained.

***Written Description***

Claims 170-172, 176 -178, 181-183, 185, 187, 188, 190-192, and 200-203 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is repeated for the reasons of record as set forth in the last Office action of 06/16/04. Applicant's arguments filed 11/19/04 have been considered but are not deemed persuasive.

Applicant's assertion that the claims as currently amended satisfy the written description requirement is incorrect. The amendment to claims 170-172, 176-178, 181-182, 190, and 200-203, to recite, "consisting essentially" does not necessarily imply that the referenced sequence has a complete structure and hence has the desired functional activity. SEQ ID NO: 4 encoding SEQ ID NO: 5 is a partial DNA (it does not possess a complete open reading frame, i.e., no start and stop codons are shown) encoding a

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partial protein having no known function as stated in the last Office action. Applicant has provided no evidence to support the conclusion that the partial DNA encodes a cellulose synthase and functions in the biosynthesis of cellulose. In addition, the claims do not recite function, i.e., cellulose synthase activity. Claims 170, 176, and 190 encompass a polynucleotide encoding a polypeptide consisting essentially of an UDP-glucose binding domain of SEQ ID NO: 5. The claims imply that SEQ ID NO: 5 contains more than one UDP-glucose binding domains. The specification fails to describe SEQ ID NO: 5, its UDP-binding domains, QXXRW signature, or their ability to function individually as cellulose synthase in a transgenic plant. Since SEQ ID NO: 4 is partial DNA and Applicant has not disclosed any cellulose synthase functional activity, transgenic plants comprising SEQ ID NO: 4 or 5, and a method that employs SEQ ID NO: 4 or 5 are similarly not described. See *Genentech Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1366, 42 USPQ2d 1001, 1005 (Fed. Cir. 1997) where it states ". .... It is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention ". Therefore, for the reasons discussed above and in the last Office action of 06/16/04, the claimed invention is not adequately described.

Claims 183,185, 187-188, 191-192 are included in the rejection because no cellulose synthase activity is recited in the claims. An amendment to these claims to recite, ---wherein the polypeptide has cellulose synthase activity--- would obviate the rejection.

**Remarks**



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The polynucleotide sequences of SEQ ID NO: 1 and 4 encoding SEQ ID NO: 2 and 5 are deemed free of the prior art.

Claims 167-169, 173-175, 179-180, 193-199, and 204-206 are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Medina A. Ibrahim whose telephone number is (571) 272-0797. The Examiner can normally be reached Monday -Thursday from 8:00AM to 5:30PM and every other Friday from 9:00AM to 5:00 PM. Before and after final responses should be directed to fax nos. (703) 872-9306 and (703) 872-9307, respectively.

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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Dr. Amy Nelson, can be reached at (571) 272-0804.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

2/14/05

Mai

A handwritten signature in black ink, appearing to read 'Amy Nelson', with a long horizontal stroke extending to the right.

AMY J. NELSON, PH.D  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1600